

Bunch lengthening study with harmonic cavities for HLS-III

Thursday 4 September 2025 18:55 (1h 35m)

Hefei Light Source II (HLS-II) is currently planned for an upgrade to Hefei Light Source III (HLS-III). To increase beam Touschek lifetime and suppress beam instabilities, HLS-III will employ harmonic cavities for bunch lengthening. This study evaluates bunch lengthening performance for different RF frequencies and harmonic cavity orders using theoretical analytical formulations, identifying the required cavity voltages and quantifying the corresponding Touschek lifetime improvement factors. This study provides critical guidance for the selection of RF frequencies and harmonic cavity parameters for HLS-III.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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Session Classification: Poster Session

Track Classification: MC2: Beam Dynamics and EM Fields